Workspace observation

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HCI 450

1 Source: http://ergo.human.cornell.edu/dea651/dea6512k/ideal_posture_1.jpg
User Description:

- Male, 27 years of age
- Full-time student, web designer
- Uses computer at home for school and work purposes
- Time spent on the computer a week: 30-35 hours

Location:

Subject’s home (2 bedroom apartment, Chicago), his home office.

Duration of Observation:

20 minutes

Objective:

An observation of factors that affect the usability in a workspace in a home setting.

Method:

The user was informed about the purpose of the study. He was informed that all the data gathered during the test will be kept confidential and will only be used for the purposes of this study.

The user was observed during his work as a web designer. He was informed that he can stop the observation at any time.

During the test there was no verbal contact between the user and the observer.

A checklist from office-ergo.com was used as a guideline in the observation. It provided the information about what to look for when grading the usability of the workspace. Additional notes were taken by the observer as well.

After the test there was time provided for discussion with the user. Additional questions were asked about the workspace:
- who design the space?
- how did the designer made the decision on light, desk e.t.c.?
- how do you like working in this space?
- what would you change in this space?
After the observation the user was thanked for the participation.

Result:

The user seemed very comfortable at his workspace. But there were some ergonomic issues present in the space.

The user is the owner of a very comfortable, big, swirled chair. The chair provides the support for the back, has adjustable height, backrest and padded armrests. It is clear that user invested a lot of thought and time picking up a comfortable chair. But the size (and weight) of the chair is causing problems for the user. During the observation user was trying to move around the space (e.g. from desk to the shelf) without getting up from the chair. The apartment has carpet flooring. The traction between wheels and the surface was too big. User had obvious difficulties moving around.

Apart from the fact that the chair is difficult to move around, it is a very well designed chair. Adjustable height makes it possible for the user to achieve most comfortable position while sitting at the desk and using the computer. His back is resting against the back of the chair, arms are placed on armrest, and feet are flat on the floor. There is no visible tension in his posture.
The screen (also adjustable) is position perfectly, about 25-30 inches from the eyes. The mouse is located on the right, right next to the keyboard (about 4 inches) sitting on a fancy mouse pad (with the wrist rest).

Problems arise when the user is working on the keyboard and using a book (as a reference) at the same time.

The desk does not have a separate surface for the keyboard (e.g. a tray). When the user places the book on the desk, he moves the keyboard further away, towards the screen. This changes his entire posture.

Now he needs to reach over the book to get to the keyboard. He leans toward the screen. His arms are on the hard surface of the desk, he is not using the backrest and the distance between his eyes and the screen is decreased to about 15 inches.

User seems less comfortable during this task. He moves in a chair a lot and very frequently changes his position. He touches his eyes very often. The distance between the mouse and the keyboard changed. Now it is close to 7 inches.

While typing the user bends his wrist downwards. He also has difficulties reaching the side keys (his wrists bend to the side). He seems to be making more mistakes while typing this way. He uses the backspace key very frequently. The pace of his typing is slower.

There are not a lot of other artifacts at the desk. Besides the screen, the keyboard and the mouse (and a mouse pad), there is only a pencil cup, a set of two small speakers and a lamp. It leaves a lot of unused space on the surface. All the documents and books are organized on the two shelves.

The lightning in the room is very good. During the day user has an access to daylight (a big window to his left). During the night there are two sources: ceiling light (ambient) and a lamp on the desk. Both of them provide sufficient lightning: the ceiling lamp is for the shelves and the desk lamp for the keyboard (or other things placed on the desk) and the screen.

The screen is a very good quality. It is flat and adjustable. There is no glare. When the user works only using his computer he does not experience any fatigue. The distance from the eyes is appropriate. Only when he changes his position (when he uses a book) is when the problems occur. His eyes get tired and he needs to look away every once in a while.
Discussion:

The user designed his workspace very carefully\(^2\). Being aware of the fact that he spends a lot of time in his office, user paid a lot of attention while choosing the chair, desk and other important items in his workspace. The user made sure that things like mouse pad or keyboard have wrists rests. He has been a web designer for over 8 yeas. Over this time he was able to realize which things make his work comfortable and which cause problem (pain, discomfort).

His choices result in a very usable space. He is able to work in a comfortable position. His eyes do not get tired; his arms and elbows have a place to rest, as well as his back. There are no visible usability issues while the user is working on his computer.

The situation changes when the user needs to use a book (or notes) and work on his keyboard at the same time. His position then becomes awkward and uncomfortable. Obviously it is very harmful to the user’s performance. The placement of the keyboard forces him to lean and reach for a long time. The user does not seem comfortable. His eyes get tired. All the factors slow down his work.

This problem can be easily resolved in two different ways.

First (more expensive) option would be to purchase a new desk. A desk with a separate tray for a keyboard and a mouse would leave room on the top for placing things like books and notes, without changing the position of the keyboard\(^3\).

Second way of dealing with this problem would be a simple addition to the existing desk. Placing a portable book holder (see appendix, picture 1) would solve the problem. User has a lot of unused space on his desk. Placing the holder to the side of the screen would provide an easy view of the book (or notes) without loosing a comfortable position. User would not have to look far away from the screen to see the book. The current lightning would be appropriate for this solution as well.

Another issue noticeable during the observation was the fact that user was not able to move easily on his chair around the space. The problem was the traction of the wheels against the carpet. This problem can be easily solved by using the floor mat in appropriate size in the space (see appendix, picture 2). This inexpensive solution would provide a flat, hard surface for the user to move the chair around.

These simple and low-cost solutions would make the space more usable.

While asked what should be changed in the space to make it more usable, the user had no suggestions. He claimed he was very comfortable working there. He mentioned that he gets neck and back aches every once in a while. He said: “it is probably because I spend a lot of time sitting down”. When asked how often he gets up

\(^2\) Based on the answers provided at the end of the observation

\(^3\) Assuming that the position of the tray would be comfortable for typing
during his work sessions, he replied: “not very often, when I work on something, I tend
to lose myself in a moment. Besides even if I need something from the shelf I can reach
it without getting up”.

A good solution for this problem would be reorganizing his books and
documents on the shelves. Right now the things he uses most frequently are placed on
the middle level shelves. The user can reach them without getting up from the chair.
Moving them to the highest and lowest shelves would force the user to get up or lean
and reach for them (stretch, break from the sitting position).

Overall a lot of ergonomic issues were addressed in the space. The user (also a
designer of a space) made sure that:
• his chair is comfortable (has a back rest, padded arm rests, wheels, adjustable height)
• his desk and chair allow him to have a comfortable position during the work (feet on
the floor, back on the back rest, elbows and arms on arm rests)
• mouse pad and keyboard have wrist rests
• his screen does not have a glare, has a good resolution and adjustable height and is
placed appropriately for his eyes (not too close and not too far)
• the lightning serves its purpose (lamp for the desk and ceiling lamp for the shelves)
and it is comfortable to work with (not too bright).

There were few issues that user did not take under consideration while designing
the space. He did not predict what would happen when he works with the book and
keyboard at the same time. Even after working in this space for a long time (the space
was designed 3 years ago) he was not aware of this issue.

There is no need for conducting the observation with the user once more. The
objective of the study was met. There is a very low possibility of additional issues being
present at the space.

Conclusion:

At first I was very impressed with user’s choices in his workspace. He looked
comfortable using it. The user also thought that his workspace is very usable. He liked the
chair and the desk. He was able to give an explanation for the reason of buying this and
not any other item. He was convinced that there are not ergonomic issues in his space.

When I saw the user working with the book and typing at the same time I realized
how unaware was he of the existing problems. He did not notice how dramatically his
position changes and how uncomfortable it is for him.

Another thing is that the user complained on having occasional back aches. He
was not aware that he needs to get up and stretch the body every once in a while. He
thought that since he has a comfortable chair it is all he needs for taking care of his back.
A well designed space is crucial for our performance and positive experience. Not only would it provide a comfort during the time spent in our work space (our experience will not be spoiled by discomfort), but it will also increase our productivity⁴.

The design of the workspace is important at home as well as in work offices. People who work in a usable environment will not get quickly tired, their mood will improve (less frustration) and they will deliver a better quality of work.

It is very important to conduct observations like this one in every workspace. Our predictions and good will for designing a usable space may not be enough⁵. It is very easy to overlook some potential problems. Observation can be treated as a test for the space. It can make visible things that work in the space and what should be change to improve it.

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⁴ the user was working a lot slower in his uncomfortable position
⁵ the user did not think what would happen when he places the book on his desk
Appendix

Picture 1: portable book holder

Picture 2: floor mat

6 Source: www.bookgem.com
7 Source: http://www.keysan.com